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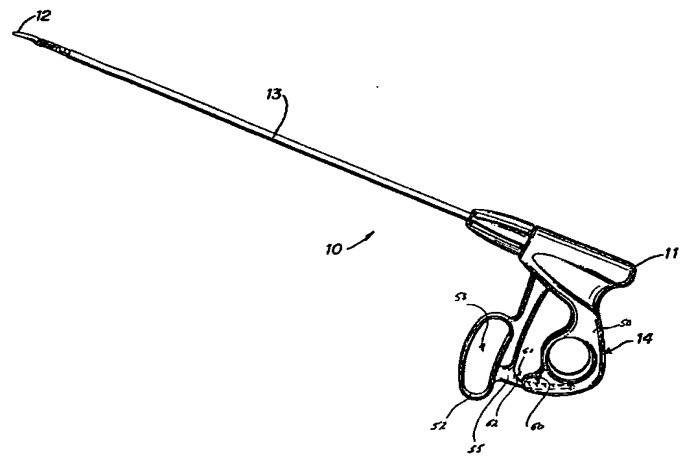
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[Continued on next page]

(54) Title: LAPAROSCOPIC BIPOLAR ELECTROSURGICAL INSTRUMENT



(57) Abstract: A laparoscopic bipolar electrosurgical instrument (10) for sealing tissue includes a handle (14) having an elongated tube (13) affixed thereto. The tube includes first (15) and second (16) jaw members having electrically conductive sealing surfaces (39, 40) attached to a distal end (12) thereof which are movable from a first position for approximating tissue to a second position for grasping tissue therebetween. The handle (14) includes a fixed handle (50) and a handle (52) which is movable relative to the fixed handle to effect movement of the jaw members (15, 16) from the first position to the second position for grasping tissue. The jaw members connect to a source of electrosurgical energy such that the opposable sealing surfaces are capable of conducting electrosurgical energy through tissue held therebetween. A stop (33, 90, 95) is included for maintaining a minimum separation distance between opposing sealing surfaces (39, 40). A ratchet (60, 62) is also included to maintain a closure force in the range of about 7 kg/cm² to about 13 kg/cm² between opposing sealing surfaces.

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Published:

— *with international search report*

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US 03/17335

A. CLASSIFICATION OF SUBJECT MATTER

IPC 6 A61B18/14

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EP0-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 509 922 A (RENDE III FRANK M ET AL) 23 April 1996 (1996-04-23) column 3, line 60 - column 4, line 6 column 7, line 59 - column 8, line 43 column 9, line 8 - line 23 figures 1,3,5	1-4
A	DE 196 08 716 C (AESCULAP WERKE AG) 17 April 1997 (1997-04-17) abstract	1,2
A	US 4 492 231 A (AUTH DAVID C) 8 January 1985 (1985-01-08) column 5, line 16 - line 43 column 7, line 25 - line 65 figure 2	1,5,7

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US 03/17335

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-7

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-7

A laparoscopic electrosurgical instrument comprising:
- a handle including a fixed handle and a moveable handle;
- a tube fixed to the handle including first and second jaw members with electrically conductive sealing surfaces;
- means for connecting the jaw members to a source of electrosurgical energy;
- means for maintaining a closure force between the sealing surfaces;
- a stop suitable for maintaining a minimum separation distance between sealing surfaces;
wherein the minimum separation distance is 0.03mm.

2. claims: 8-17

A laparoscopic electrosurgical instrument comprising:
- a handle including a fixed handle and a moveable handle;
- a tube fixed to the handle including first and second jaw members with electrically conductive sealing surfaces;
- means for connecting the jaw members to a source of electrosurgical energy;
- means for maintaining a closure force between the sealing surfaces;
- a stop suitable for maintaining a minimum separation distance between sealing surfaces;
whereby the opposable sealing surfaces include a non-stick material for reducing tissue adhesion during the sealing process.

INTERNATIONAL SEARCH REPORT

Intern: I Application No
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5509922	A	23-04-1996	CA 2076331 A1 19-04-1993
			EP 0546264 A2 16-06-1993
			US 5626609 A 06-05-1997
			CA 2050868 A1 06-04-1992
			DE 69125338 D1 30-04-1997
			DE 69125338 T2 07-08-1997
			EP 0484671 A2 13-05-1992
			JP 4246344 A 02-09-1992
			US 5486189 A 23-01-1996
			US 5522830 A 04-06-1996
			US 5478347 A 26-12-1995
			US 5489292 A 06-02-1996
DE 19608716	C	17-04-1997	DE 19608716 C1 17-04-1997
			EP 0793946 A2 10-09-1997
			US 5853412 A 29-12-1998
US 4492231	A	08-01-1985	NONE